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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/586,386

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Gunther Leising

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EXAMINER

LI, MEIYA

ART UNIT

PAPER NUMBER

2811

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/586,386	Applicant(s) LEISING, GUNTHER	
	Examiner MEIYA LI	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 12 and 15 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.
2. Claims 9-15 are objected to because of the following informalities: Misspelling error. Changing "die" to "dies" is suggested. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 9-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. The claimed limitation of "a light emitting diode comprising at least one light emitting diode die", as recited in claim 9, is unclear as how a diode can comprise a plurality of dies.
6. The claimed limitation of "a light emitting diode", as recited in claims 10-12, is unclear as to which light emitting diode applicant refers.
7. The claimed limitation of "the light emitting diode die is located directly on the metal core", as recited in claim 10, is unclear as how the light emitting die is located

directly on the metal core since "the die, arranged a light emitting diode printed circuit board by means of a die attach".

8. The claimed limitation of "contact areas", as recited in claim 11, is unclear as to which contact areas applicant refers.

9. Claims 13-15 render indefinite because they fail to further limit the subject matter (a light emitting diode) of a previous claim (9).

10. The claimed limitation of "at least one light emitting diode", as recited in claim 13, is unclear as to which light emitting diode applicant refers.

11. The claimed limitation of "the light emitting diode", as recited in claim 13, is unclear as to which light emitting diode applicant refers.

12. The claimed limitation of "at least half of the surface of the printed circuit board of the light emitting diode", as recited in claim 13, is unclear as to which surface of the printed circuit board of the light emitting diode applicant refers.

13. The claimed limitation of "a plurality of through-contacts", as recited in claim 13, is unclear as to which plurality of through-contacts applicant refers.

14. The claimed limitation of "contact areas", as recited in claim 13, is unclear as to which contact areas applicant refers.

15. The claimed limitation of "a light emitting diode light source", as recited in claims 14 and 15, is unclear as to which light emitting diode light source applicant refers.

16. The claimed limitation of "the additional printed circuit board", as recited in claim 14, is unclear as to which element is the additional printed circuit board.

17. The claimed limitation of "the through-contacts", as recited in claim 15, is unclear as to which through-contacts applicant refers.

Claim Rejections - 35 USC § 102

18. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

19. Claims 9, 12, and 13, as best understood, are rejected under 35 U.S.C. 102(e) as being Bhat et al. (2005/0023548).

As for claim 9, Bhat et al. show in Fig. 2 and related texts (see, i.e. [0023]-[0026]) a light emitting diode, comprising at least one light emitting diode die 110, arranged on a light emitting diode printed circuit board 114 by means of a die attach 122-1/122-2, the light emitting diode printed circuit board 114 comprising at a bottom surface 114b thereof rear side contacts 118-1b/118-2b,

wherein the rear side contacts 118-1c/118-2c at least partially overlap with contours of the light emitting diode die 110 and are formed in such a way as to overlap with at least half of the bottom surface 114b of the printed circuit board 114, and

wherein the printed circuit board 114 comprises a plurality of through-contacts 118-1b/118-2b thermally and electrical connecting the rear side contacts 118-1c/118-2c

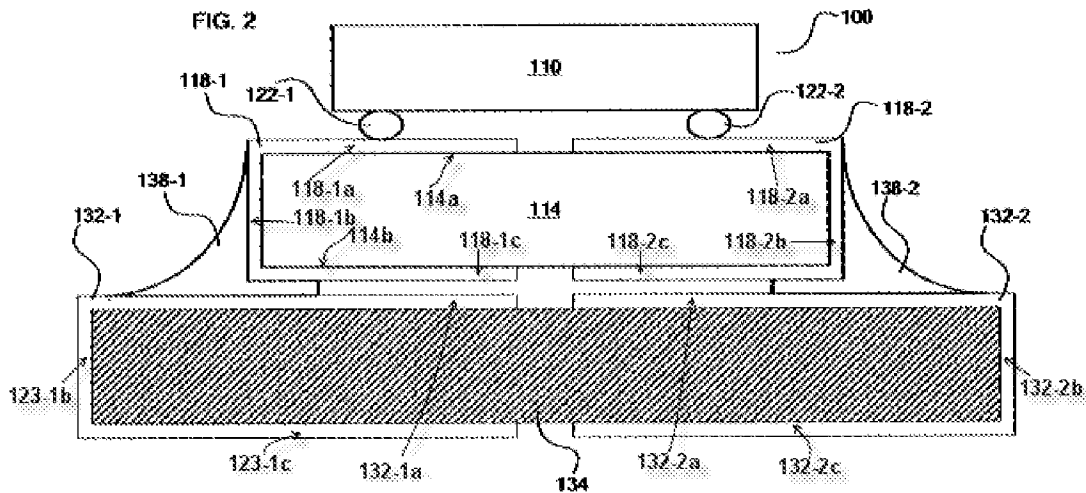
to contact areas 118-1a/118-2a formed on an upper surface 114a of the printed circuit board 114.

As for claim 12, Bhah et al. show the light emitting diode die 110 is mounted face down on the light emitting diode printed circuit board 114 ([0013], lines 2-5).

As for claim 13, Bhah et al. show a light emitting diode light source 100 having at least one light emitting diode according to claim 9 arranged on an additional board 134, wherein the additional board 134 comprises on its upper surface contact areas 132-1a/132-2a which are soldered to the rear side contacts 118-1c/118-2c of the light emitting diode,

wherein a contact surface between the contact areas 132-1a/132-2a of the additional board 134 and the rear side contact 118-1c/118-2c of the light emitting diode is at least half of the surface of the printed circuit board 114 of the light emitting diode, and

wherein the additional board 134 comprises a plurality of through-contacts 132-1b/132-2b thermally and electrically connecting at least one of the contact areas 132-1a/132-2a to a solder area 132-1c/132-2c formed at the bottom of the additional board 134.



Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

21. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

22. Claims 10, 11, and 12, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhat et al. (2005/0023548) in view of Shimizu et al. (5,389,816).

As for claim 10, Bhah et al. disclosed substantially the entire claimed invention, as applied to claim 9 above, except the light emitting diode printed circuit board is a metal core printed circuit board and wherein the die is located directly on the metal core.

Shimizu et al. teach the light emitting diode printed circuit board 22 is a metal core printed circuit board and wherein the light emitting die 12 is located directly on the metal core 22 (Fig. 2; Col. 3, line 65).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made to include the metal core PCB and wherein the die is located directly on the metal core, as taught by Shimizu et al., in Bhat et al.'s device, in order to improve the heat dissipation of the device.

As for claim 11, Bhah et al. disclosed substantially the entire claimed invention, as applied to claim 9 above, except the light emitting diode printed circuit board is a metal core printed circuit board and wherein a non-linear isolator material layer is arranged between contact areas and the metal core printed circuit board.

Shimizu et al. teach the light emitting diode printed circuit board is a metal core printed circuit board 22 and wherein a non-linear isolator material layer 26 is arranged between contact areas 20 and the metal core printed circuit board 22 (Fig. 3).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made to include the metal core PCB and wherein a non-linear isolator

material layer is arranged between contact areas and the metal core printed circuit board, as taught by Shimizu et al., in Bhet et al.'s device, in order to improve the heat dissipation of the device.

23. Claims 14 and 15, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Bhat et al. (2005/0023548) in view of Roberts et al. (2004/0113549).

Bhah et al. disclosed substantially the entire claimed invention, as applied to claim 13 above, except a cooling body is located at a rear side of the additional printed circuit board.

Roberts et al. teach a cooling body 33 is located at a rear side of the additional printed circuit board 14 (Fig. 3B; [0058], line 38; [0067], line 11).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made to include the cooling body, as taught by Roberts et al., in Bhet et al.'s device, in order to improve the heat dissipation of the device.

24. Claim 15, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Bhat et al. (2005/0023548)

Bhah et al. disclosed substantially the entire claimed invention, as applied to claim 13 above, except the through-contacts having a diameter of less than 100 μm .

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to include the diameter of the through-contacts 100 μm thick, in order to optimize the performance of the device. Furthermore, it has been held that

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discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It has been held in that the applicant must show that a particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). Note that the law is replete with cases in which when the mere difference between the claimed invention and the prior art is some dimensional limitation or other variable within the claims, patentability cannot be found. The instant disclosure does not set forth evidence ascribing unexpected results due to the claimed dimensions. See *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338 (Fed. Cir. 1984), which held that the dimensional limitations failed to point out a feature which performed and operated any differently from the prior art.

Response to Arguments

25. Applicant's arguments with respect to claims 9-15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MEIYA LI whose telephone number is (571)270-1572. The examiner can normally be reached on Monday-Friday 7:30AM-5:00PM Eastern Standard Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Gurley can be reached on (571) 272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. L./

Examiner, Art Unit 2811

5/21/2008

/Ori Nadav/

Primary Examiner, Art Unit 2811